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Lab #2

The screenshot shows the pgAdmin 3 application window. The main window is titled "Query - CAP2 on postgres@localhost:45432 *". It contains a "SQL Editor" tab with the following query:

```
select *  
From Customers;
```

The "Output pane" at the bottom displays the results of the query in a table format. The table has four columns: "cid", "name", "city", and "discount". The data is as follows:

	cid character(4)	name text	city text	discount numeric(5,2)
1	c001	Tipto	Dulu	10.00
2	c002	Basic	Dall	12.00
3	c003	Allie	Dall	8.00
4	c004	ACME	Dulu	8.00
5	c005	Weyla	Ache	0.00
6	c006	ACME	Kyot	0.00

The status bar at the bottom indicates "OK.", "Unix", "Ln 3, Col 1, Ch 27", "6 rows.", and "11 ms".

Query - CAP2 on postgres@localhost:45432 *

File Edit Query Favouirites Macros View Help

SQL Editor Graphical Query Builder

Previous queries Delete Delete All

```
select *
From products;
```

Scratch pad

Output pane

Data Output Explain Messages History

	pid character(3)	name text	city text	quantity integer	priceusd numeric(10,2)
1	p01	comb	Dall	111400	0.50
2	p02	brush	Newa	203000	0.50
3	p03	razor	Dulu	150600	1.00
4	p04	pen	Dulu	125300	1.00
5	p05	penci	Dall	221400	1.00
6	p06	folde	Dall	123100	2.00
7	p07	case	Newa	100500	1.00
8	p08	clip	Newa	200600	1.25

OK. Unix Ln 2, Col 14, Ch 24 8 rows. 11 ms

pgAdmin 3

File Edit Plugins View Tools Help

Object browser

Server Groups

Servers (1)

PostgreSQL

Database

Table

Group

Log

Query - CAP2 on postgres@localhost:45432 *

File Edit Query Favourites Macros View Help

SQL Editor

Graphical Query Builder

Previous queries

Delete Delete All

Scratch pad

Output pane

Data Output Explain Messages History

	aid	name	city	percent
	character(3)	text	text	real
1	a01	Smith	New	6
2	a02	Jones	New	6
3	a03	Brown	Toky	7
4	a04	Gray	New	6
5	a05	Otasi	Dulv	5
6	a06	Smith	Dall	5
7	a08	Bond	Lond	7

OK. Unix Ln 2, Col 12, Ch 22 7 rows. 21 ms

The screenshot shows a PostgreSQL query editor window titled "Query - CAP2 on postgres@localhost:45432 *". The window has a menu bar (File, Edit, Query, Favourites, Macros, View, Help) and a toolbar. The "SQL Editor" tab is active, showing the query: `select *
From orders;`. The "Output pane" is visible at the bottom, showing the results of the query in a table format. The table has 8 columns: `ordno` (integer), `mon` (character(3)), `cid` (character(4)), `aid` (character(3)), `pid` (character(3)), `qty` (integer), `dollars` (numeric(12,2)). There are 14 rows of data. The status bar at the bottom indicates "OK.", "Unix", "Ln 3, Col 1, Ch 24", "14 rows.", and "12 ms".

	ordno integer	mon character(3)	cid character(4)	aid character(3)	pid character(3)	qty integer	dollars numeric(12,2)
1	1011	jan	c001	a01	p01	1000	450.00
2	1013	jan	c002	a03	p03	1000	880.00
3	1015	jan	c003	a03	p05	1200	1104.00
4	1016	jan	c006	a01	p01	1000	500.00
5	1017	feb	c001	a06	p03	600	540.00
6	1018	feb	c001	a03	p04	600	540.00
7	1019	feb	c001	a02	p02	400	180.00
8	1020	feb	c006	a03	p07	600	600.00
9	1021	feb	c004	a06	p01	1000	460.00
10	1022	mar	c001	a05	p06	400	720.00
11	1023	mar	c001	a04	p05	500	450.00
12	1024	mar	c006	a06	p01	800	400.00
13	1025	apr	c001	a05	p07	800	720.00
14	1026	may	c002	a05	p03	800	740.00

Primary Key – A unique identifier for rows in a table, most tables should have a primary key and each table can have only one primary key. A column or combination of columns that uniquely identify a record. Only one candidate key can be a primary key.

Candidate Key – any column or a combination of columns that can qualify as unique key in database. There can be multiple candidate keys in one table. Each candidate key can qualify as a primary key.

Super Key – A combination of attributes that can be uniquely used to identify a database record. A table may have multiple super keys, candidate keys are a special kind of super key.

Short Essay: Data Types

In SQL there are many data types which are used to define the kind of data that will be stored in a table column. Data types help SQL determine how it will interact with stored data. The general data types in SQL include CHARACTER, VARCHAR, BINARY, BOOLEAN, VARBINARY, INTEGER< SMALLINT, BIGINT, DECIMAL, NUMERIC, FLOAT, REAL,, DOUBLE PRECISION, DATE<, TIME, TIMESTAMP, INTERVAL, ARRAY, MULTISSET, and XML. When using these, you may want to create a table for a customer contact information. In such a table it would be best to have the following columns: Customer ID, First Name, Last Name, Email Address, Phone Number, and Mailing Address. For each of these columns the corresponding data types are as follows: CHARACTER, VARCHAR, VARCHAR, VARCHAR, CHARACTER, and VARCHAR. Of these Email Address, Phone Number or Mailing Address could be NULL if a customer decided not to forfeit this information.

Relational Rules

The “First Normal Form” Rule – Data items must be defined and data groups must not repeat. This means that in any given table any entry in a column must contain only one value. To give an example, product ID (pid) cannot be entered as “p01, p02”, it must be either “p01” or “p02”. This makes a more sense if you think about qualities of a product such as color, you cannot enter “red, blue” for color you must enter either “red”, or “blue”. Now as for the aspect of non-repetition, a table cannot repeat attributes, this means if you’re trying to record data about books and authors you cannot have multiple columns for the authors, you must make a separate table.

The “Access Rows by Content Only” Rule – Can’t ask for the location of content, rather one must ask for the content. IE: Can’t say “give me the third row down on the Orders table”. This is important as it allows the position of data in the database to shift as needed, and to be accessed more accurately.

The “All Rows Must be Unique” Rule – Two rows cannot contain entirely identical values at one time. This means for a row in a table called “products” you cannot have two rows of a product with the exact same attributes, you cannot have two rows containing “p01, Comb, Austin, 2.00”. If you do you cannot accurately access data as this creates ambiguity which cannot be resolved.